CLAIMS

1. An apparatus for forming multicolor halftone images including halftone plates of a plurality of colors for reproducing a colored image, wherein each halftone plate is tilted with a relative screen angular difference of 30 degrees or 45 degrees in relation to at least one of the remaining halftone plates, the apparatus comprising:

a specific halftone plate having halftone dots disposed at a predetermined pitch on the basis of a predetermined screen angle; and

the remaining halftone plates, wherein a right triangle is defined for each of the remaining halftone plates such that its vertical angle is equal to a screen angle difference of 30 degrees or 45 degrees which the halftone plate has in relation to another halftone plate, and its two sides forming the vertical angle corresponds to screen angle directions of the two halftone plates, and on the basis of the right triangle, respective halftone dots of the two halftone plates are disposed at a pitch equal to the predetermined pitch along the screen angle directions of the two halftone plates corresponding to the two sides forming the vertical angle, wherein

the halftone dots are disposed on the basis of the ratio of the three sides of the right triangle represented by numerical values including $\sqrt{3}$ or $\sqrt{2}$, which is an irrational number, the numerical values being approximated by integral

values which approximate values obtained by multiplying the numerical values by an integer.

2. The apparatus according to claim 1, wherein the two sides forming the vertical angle of the right triangle having the vertical angle of 30 degrees have a ratio approximated by integral values of 7:8, 19:22, or 26:30.

3. The apparatus according to claim 1, wherein the two sides forming the vertical angle of the right triangle having the vertical angle of 45 degrees have a ratio approximated by integral values of 5:7, 7:10, or 12:17.

4. The apparatus according to claim 1, wherein the specific halftone plate is a magenta (M) halftone plate, a black (K) halftone plate maintains a relative screen angular difference of 30 degrees in relation to the magenta (M) halftone plate, a cyan (C) halftone plate maintains a relative screen angular difference of 30 degrees in relation to the black (K) halftone plate, and a yellow (Y) halftone plate maintains a relative screen angular difference of 45 degrees in relation to the black (K) or cyan (C) halftone plate.

5. The apparatus according to claim 4, wherein for the yellow (Y) halftone plate which hardly produces moiré, when the ratio of the right triangle is represented by approximated integral values, a larger rounding error is

permitted, and the halftone-dot arrangement pitch of the yellow halftone plate is made higher or lower than those of the remaining halftone plates, whereby the yellow halftone plate overlaps a point where the remaining three halftone plates are overlap.

6. The apparatus according to claim 1, wherein super cells whose line numbers are the same among all the halftone plates and which intersect at at least one point are configured for each halftone plate, and the super cells are joined while the screen angles of the respective halftone plates are used as a reference.

7. A method of forming multicolor halftone images including halftone plates of a plurality of colors for reproducing a colored image, wherein each halftone plate is tilted with a relative screen angular difference of 30 degrees or 45 degrees in relation to at least one of the remaining halftone plates, the method comprising the steps of

disposing halftone dots in s specific halftone plate at a predetermined pitch on the basis of a predetermined screen angle of the specific halftone plate;

defining, for each of the remaining halftone plates, a right triangle such that its vertical angle is equal to a screen angel difference of 30 degrees or 45 degrees which the halftone plate has in relation to another halftone plate, and its two sides forming the vertical angle corresponds to

screen angle directions of the two halftone plates;

representing the ratio of the three sides of the right triangle represented by numerical values including $\sqrt{3}$ or $\sqrt{2}$, which is an irrational number, the numerical values being approximated by integral values which approximate values obtained by multiplying the numerical values by an integer; and

disposing, on the basis of the right triangle having a ratio approximated by integral values, respective halftone dots of the two halftone plates at a pitch equal to the predetermined pitch along the screen angle directions of the two halftone plates corresponding to the two sides forming the vertical angle.

8. The method according to claim 7, wherein the two sides forming the vertical angle of the right triangle having a vertical angle of 30 degrees have a ratio approximated by integral values of 7:8, 19:22, or 26:30.

9. The method according to claim 7, wherein the two sides forming the vertical angle of the right triangle having a vertical angle of 45 degrees have a ratio approximated by integral values of 5:7, 7:10, or 12:17.

10. The method according to claim 7, wherein the specific halftone plate is a magenta (M) halftone plate, a black (K) halftone plate maintains a relative screen angular difference

of 30 degrees in relation to the magenta (M) halftone plate, a cyan (C) halftone plate maintains a relative screen angular difference of 30 degrees in relation to the black (K) halftone plate, and a yellow (Y) halftone plate maintains a relative screen angular difference of 45 degrees in relation to the black (K) or cyan (C) halftone plate.

11. The method according to claim 10, wherein for the yellow (Y) halftone plate which hardly produces moiré, when the ratio of the right triangle is represented by approximated integral values, a larger rounding error is permitted, and the halftone-dot arrangement pitch of the yellow halftone plate is made higher or lower than those of the remaining halftone plates, whereby the yellow halftone plate overlaps a point where the remaining three halftone plates are overlap.

12. The method according to claim 7, wherein super cells whose line numbers are the same among all the halftone plates and which intersect at at least one point are configured for each halftone plate, and the super cells are joined while the screen angles of the respective halftone plates are used as a reference.